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Abstract
The Social Phobia and Anxiety Inventory (SPAI) is a new instrument designed to assess symptoms of social phobia. Although the scale has been shown to have a good test-retest reliability, internal consistency, and construct validity, no studies have examined its concurrent validity with respect to other measures of social anxiety and avoidance. In the present study, the relationship between the SPAI and several self-report measures of social anxiety was examined in a sample of 23 patients meeting DSM-III-R criteria for social phobia. The relationship between the SPAI and other measures of psychopathology, as well as performance during a role play test and an impromptu speech, was also examined. The results strongly support the concurrent validity and the specificity of the SPAI. The Social Phobia subscale may be a better index of social anxiety symptoms than the Difference subscale.

Keywords: Social Phobia and Anxiety Inventory (SPAI), social anxiety, validity, assessment

Introduction

Social phobia, known as "the neglected anxiety disorder" (Liebowitz, Gorman, Fyer, & Klein, 1985), is arguably the least understood of the anxiety disorders. The condition was not officially recognized as a distinct diagnostic entity until publication a decade ago of the DSM-III (American Psychiatric Association, 1980). Although research on social phobia

has increased substantially over the past decade, until recently the field has been marked by the absence of an empirically derived, psychometrically sound self-report instrument for the assessment of the disorder. There are several psychometrically sound measures of social anxiety, including the widely used Social Avoidance and Distress and Fear of Negative Evaluation Scales (Watson & Friend, 1969). However, there is considerable debate in the field regarding the utility of these measures for assessing the clinical syndrome of social phobia (Heimberg, Hope, Rapee, & Bruch, 1988; Turner & Beidel, 1988; Turner, McCanna, & Beidel, 1987).

The Social Phobia and Anxiety Inventory (SPAI; Turner, Beidel, Dancu, & Stanley, 1989) was developed specifically to assess the syndrome of social phobia as defined in the DSM-III-R. The SPAI was systematically constructed according to the behavioral-analytic model of Goldfried and D'Zurilla (1969). It assesses social phobic symptoms across verbal, motor, and physiological response domains (Lang, 1977). The instrument consists of 32 items comprising a Social Phobia subscale and an additional 13 items comprising an Agoraphobia subscale. Each item is rated on a 1–7 Likert scale according to how frequently it is experienced. A Difference subscale score is derived by subtracting the Agoraphobia subscale from the Social Phobia subscale. In addition to providing a global index of social phobic symptomatology, the SPAI's review of various social situations makes it clinically useful in facilitating an ideographic assessment of specific phobic situations for individual persons.

In their initial description of the instrument's development, Turner, Beidel, Dancu, and Stanley (1989) present data supporting its internal consistency, test-retest reliability over a 2-week period, and ability to discriminate socially phobic patients from those with other anxiety disorders. Turner's group has since published three additional validation papers on the instrument. Taken together, these studies provide initial support for the test-retest reliability, internal consistency, and construct validity of the SPAI. Beidel, Turner, Stanley, and Dancu (1989) found that socially phobic college students scored higher on the SPAI than their nonsocially anxious peers. They also found positive correlations between the SPAI and various self-ratings of distress in daily social situations, as well as a positive correlation between the subject's own SPAI and one completed about the subject by a significant other. The relationship between the SPAI and self-ratings of social distress was subsequently replicated by Beidel, Borden, Turner, and Jacob (1989) in a clinical sample of social phobics. Beidel, Borden, Turner, and Jacob (1989) also found modest correlations between somatic items on the SPAI and subjects' pulse during an impromptu speech, as well as avoidance items and the length of time subjects participated in the speech. Finally, Turner, Stanley, Beidel, and Bond (1989) used a series of factor analytic methods to examine the factor structure of the SPAI and to compare the response patterns of various anxiety disordered groups. These analyses supported the distinction between the social phobia and agoraphobia subscales. Although social phobics did not differ from obsessive-compulsives in their response pattern, they did differ from agoraphobics. An important gap in the work to date on the SPAI concerns the concurrent validity of the instrument in relation to other clinical measures of social anxiety and avoidance. The present study examined the concurrent validity of the SPAI with respect to several widely used measures of social anxiety

and related constructs (e.g., fear of negative evaluation by others, avoidance of social situations) in a sample of social phobic patients. Measures of other forms of psychopathology were also examined in order to evaluate the specificity of the SPAI to social phobia. The validity of the instrument was further evaluated by assessing its relationship to ratings of subjective anxiety during a role-play test, as well as to measures of social skills.

Method

Subjects

Subjects were recruited through community announcements offering a free nonmedication treatment program for extreme social anxiety. Subjects were administered the Structured Clinical Interview for DSM-III-R (Spitzer, Williams, Gibbon, & First, 1989) and the social phobia section of the Anxiety Disorders Interview Schedule (DiNardo & Barlow, 1988) by one of two diagnosticians. The inclusion criteria included (a) a primary diagnosis of the generalized subtype of social phobia, (b) fluency in English, and (c) age between 18 and 55 years. The exclusion criteria included (a) history of schizophrenia, bipolar disorder, organic brain syndrome, mental retardation, or substance dependence; and (b) current psychotherapy or use of psychotropic medications. Interrater reliability for the diagnostic judgments, calculated on 50% of the sample, was 92%. The sample consisted of 23 persons, including 11 (48%) males and 12 females. Avoidant personality disorder was a common comorbid diagnosis, occurring in 14 (61%) of the sample. Other less common comorbid diagnoses, occurring in less than 15% of the sample, included dysthymia, other anxiety disorders, and other personality disorders. The mean age of the sample was 36 years.

Measures

Following the structured diagnostic interview, subjects completed a battery of standardized questionnaires. These included the most commonly used self-report measures of social anxiety, distress, and avoidance, as well as measures of nonsocial anxiety (e.g., agoraphobia), depression, and overall psychopathology. Each measure is described below.

Social Avoidance and Distress Scale (SADS; Watson & Friend, 1969)

The most commonly used measure of social anxiety and avoidance, the SADS, is a 28-item true-false inventory that measures subjective distress experienced in social situations and avoidance of such situations. Although the SADS has been shown to have adequate test-retest reliability with student groups (Watson & Friend, 1969) and to be responsive to changes due to treatment among social phobics (Heimberg, Dodge, Hope, Kennedy, & Zollo, 1990; Stravynski, Marks, & Yule, 1982), its ability to discriminate social from nonsocial anxiety disorders has been questioned (Turner et al., 1987).

Fear of Negative Evaluation Scale (FNE; Watson & Friend, 1969)

The FNE is a 30-item true-false inventory that measures anticipation and distress about negative evaluation by others. Like the SADS, the FNE has been shown to have acceptable test-retest reliability with student samples but may not discriminate among different anxiety disorders.

Interaction Anxiousness Scale (IAS; Leary, 1983)
The IAS consists of 15 items rated on a 5-point Likert scale as to how characteristic they are of oneself. Items focus on anxiety experienced in a variety of interpersonal contexts such as interactions with strangers, authority figures, and members of the opposite sex. Items related to behavioral avoidance are excluded, thereby yielding a "pure" measure of the subjective experience of social anxiety. The IAS was empirically derived and has a good test-retest reliability, construct, and criterion validity (Leary, 1983).

Fear Questionnaire (FQ; Marks & Mathews, 1979)
The FQ is a 15-item inventory that lists various common phobic situations that are rated on a 0–8 Likert scale of avoidance. Three subscales include agoraphobia, blood and injury fears, and social anxiety. Each subscale has been shown to have adequate psychometric properties (Arrindell, Emmelkamp, & van der Ende, 1984).

Liebowitz Social Anxiety Scale (LSAS; Liebowitz, 1987)
The LSAS is a 24-item scale, consisting of 13 items that describe performance situations (e.g., "writing while being observed") and 11 items that describe social situations (e.g., "meeting strangers"). Each item is rated on a 0–3 scale of fear as well as a 0–3 scale of avoidance. Four subscores are generated: social fear, social avoidance, performance fear, and performance avoidance. Although no data are available regarding its psychometric properties, the LSAS is included here because of its widespread use, particularly in psychiatric treatment studies of social phobia (e.g., Reich & Yates, 1988).

State-Trait Anxiety Inventory (Trait Scale) (STAI; Spielberger, 1983)
The STAI consists of 20 items that describe various emotional states in which subjects rate how they feel on 1–4 Likert scales. The STAI is the most widely used measure of trait anxiety, and has been shown to be psychometrically sound (Spielberger & Vagg, 1984).

Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961)
The BDI consists of 21 items, each of which is composed of four increasingly severe descriptions of a depressive symptom. Subjects choose the one description for each item that best describes how they have felt over the prior week. The BDI is the most widely used self-report measure of depression and is supported by an extensive psychometric literature (Beck & Steer, 1988).

Symptom Check-List 90—Revised (SCL-90-R; Derogatis, 1983)
The SCL-90-R is a 90-item inventory in which various symptoms are rated on a zero-to-four scale of degree of distress over the past week. The SCL-90-R is widely used in studies of various forms of psychopathology and is supported by an extensive body of psychometric research (Derogatis, 1983). Although the instrument yields nine subscale scores for specific types of psychopathology, given the relatively small size of the present sample and our concern for controlling experiment-wise Type I error, we focused only on the Global Symptom Index, a measure of overall distress associated with the number and intensity of psychiatric symptoms.

Subjects returned approximately 1 week following the diagnostic interview for an assessment of social skills and completion of the self-report scales. Social skills were assessed with a role-play test (RPT) and an impromptu speech. The RPT consisted of two 3-min interpersonal scenarios involving initiating and maintaining a conversation with strangers. The scenarios were enacted with confederates who were trained to respond in a neutral and reserved but friendly manner, thereby placing the burden of maintaining the conversation on the subject. Prior to the RPT subjects were instructed in the use of the Subjective Units of Discomfort Scale (SUDS), a 0–100 self-rating of subjective anxiety (Wolpe & Lazarus, 1966). Subjects gave a SUDS rating just prior to each role-play scenario and then again immediately following the enactment. They also rated their highest level of anxiety during each role play immediately following the enactment.

Following the RPT, subjects presented a 3-min impromptu speech to a small audience on a topic chosen from four alternatives suggested by the experimenter (e.g., things to do and see in Philadelphia). The RPT and the speech were videotaped and then later rated by two research assistants on overall social skill using a 5-point Likert scale. The research assistants were trained using a library of videotapes from pilot work. Interrater reliability, calculated on 43% of the ratings using intraclass correlations, was moderately strong (r = .58, $p < .001$).

Results

Demographic Characteristics

T tests revealed no gender differences on the Social Phobia, Agoraphobia, or Difference subscales of the SPAI. Similarly, one-way analyses of variance revealed no differences on any of the subscales for marital status or educational level.

Measures of Social Anxiety

A series of Pearson product-moment correlations was computed to evaluate the relationship among the Social Phobia, Agoraphobia, and Difference subscales of the SPAI and the other social anxiety measures. All correlations were adjusted for multiple tests using the Bonferroni procedure. As is evident in Table I, all of the social anxiety and avoidance scales except the LSAS were significantly correlated with the Social Phobia subscale of the SPAI. In contrast, the Agoraphobia subscale was not related to any of the measures of social anxiety. The results for the Difference subscale were similar to those for the Social Phobia subscale, although the magnitude of the correlation coefficients tended to be somewhat smaller.

Table I. Correlation between SPAI and Measures of Social Anxiety and Avoidance

	Social phobia and anxiety inventory		
	Social Phobia subscale	Agoraphobia subscale	Difference subscale
Social Avoidance and Distress Scale	.73***+	.03	.77***☞
Interaction Anxiousness Scale	.79 ***+	.29	.75***+
Fear Questionnaire – Social Anxiety	.65 **+	.16	.64***☞
Fear of Negative Evaluation Scale	.60*+	.31	.54*
Social Anxiety Scale			
Social Fear subscale	.53*	.17	.51*
Social Avoidance subscale	.49*	.23	.45
Performance Fear subscale	.42	.41	.33
Performance Avoidance subscale	.49*	.43	.39

*$p < .01$
**$p < .001$
***$p < .0001$
☞ Bonferroni Bounds correction ($p < .05$)

Other Measures of Psychopathology

Pearson correlations were also computed to examine the association between the SPAI and measures of psychopathology other than social anxiety. As shown in Table II, the Social Phobia subscale was not significantly associated with trait anxiety, depression, or agoraphobia. Interestingly, the Social Phobia subscale was associated with both the blood and injury scale of the FQ and the Global Symptom Index of the SCL-90-R. As predicted, the Agoraphobia subscale of the SPAI was positively correlated with the Agoraphobia scale of the FQ. In addition, there was a trend for the Agoraphobia subscale to be correlated with global psychopathology, depression, and blood and injury phobia, although these correlations did not remain significant when the Bonferroni correction was applied. Once again, the results for the Difference subscale were similar to, although weaker than, those for the Social Phobia subscale.

Table II. Correlation between SPAI and Measures of Psychopathology Other Than Social Anxiety

	Social phobia and anxiety inventory		
	Social Phobia subscale	Agoraphobia subscale	Difference subscale
State-Trait Anxiety Inventory (Trait Scale)	.45	.40	.36
Beck Depression Inventory	.33	.53*	.20
Fear Questionnaire–Agoraphobia Scale	.03	.61**☞	–.15
Fear Questionnaire–Blood & Injury Scale	.57*☞	.48*	.47*
SCL-90-R Global Symptom Index	.62**☞	.56*	.50*

*$p < .01$
**$p < .001$
☞ Bonferroni Bounds correction ($p < .05$)

Social Skills and Self-Ratings of Anxiety

A single social skill (OSS) score was computed for each patient by summing the ratings for the two role-play scenarios. Similarly, the three SUDS ratings (pre, highest, and post) for each RPT enactment were summed, yielding a single SUDS score for each enactment. The SUDS scores for the two RPT enactments were then summed, yielding a single index of subjective anxiety for the RPT. The three SUDS ratings from the impromptu speech were also summed to yield a single SUDS score for the speech.

Correlations were computed to examine the association between the SPAI and the OSS and SUDS measures from the RPT, as well as the corresponding OSS and SUDS ratings from the impromptu speech. As shown in Table III, the Social Phobia subscale was significantly correlated with the SUDS ratings in the speech. There was a trend for the Social Phobia subscale to be correlated with the SUDS rating in the RPT and with overall social skills in the speech, although these correlations did not remain significant following the Bonferroni correction. The correlation between Social Phobia subscale and social skills in the RPT was also in the expected direction but did not reach significance. In contrast, the Agoraphobia subscale was not significantly correlated with either SUDS or social skill ratings. Consistent with prior results, the pattern of results for the Total subscale was similar to that for the Social Phobia subscale.

Table III. Correlation between SPAI and Social Skills and Subjective Anxiety

	Social phobia and anxiety inventory		
	Social Phobia subscale	Agoraphobia subscale	Difference subscale
Overall social skills (role-play test)	–.26	–.34	–.18
Overall social skills (impromptu speech)	–.47*	–.21	–.44
SUDS rating (role-play test)	.54*	.33	.47*
SUDS rating (impromptu speech)	.61**☞	.01	.64**☞

*$p < .01$

**$p < .001$

☞ Bonferroni Bounds correction ($p < .05$)

Discussion

This study evaluated the concurrent validity of the SPAI with a variety of questionnaire measures as well as ratings of social skill and anxiety from a role-play test and an impromptu speech. The results provide strong support for the concurrent validity of the Social Phobia subscale of the SPAI with respect to several other self-report measures of social anxiety and avoidance. The Social Phobia subscale was positively correlated with seven of the eight questionnaire measures of social anxiety. Even when the significance level was adjusted for multiple tests by the Bonferroni Bounds procedure, the correlations between the Social Phobia subscale and all of the social anxiety measures except the Liebowitz Social Anxiety Scale were significant. It is noteworthy that Liebowitz scale, although widely used in studies of social phobia, is the only measure included in the study that has not been subjected to psychometric evaluation.

Consistent with the questionnaire data, the SPAI Social Phobia subscale was positively correlated with subjective reports of anxiety during a role-play test and an impromptu speech, providing further support for the concurrent validity of the scale. Moreover, the Social Phobia subscale was correlated with overall social skills in the impromptu speech. Although the corresponding correlation for the role-play test was in the expected direction, it did not reach significance. The lack of significance for overall social skills in the role play test may have been due to a restricted range of scores, since the sample was limited to generalized social phobics, who are widely believed to be less socially skilled than their discrete counterparts. This pattern of results suggests a moderate relationship between self-reported social anxiety and social skills.

Overall, the SPAI Social Phobia subscale evidenced good specificity for social anxiety relative to other forms of related psychopathology. The Social Phobia subscale was not associated with measures of overall trait anxiety, depression, or agoraphobia. The subscale was, however, associated with blood and injury phobia (FQ-BI) and global psychopathology (SCL-90-R GSI). With regard to the former finding, some of the items on the FQ-BI (e.g., "going to the dentist") are interpersonal situations that would be expected to evoke distress among social phobics. Similarly, the positive relationship between the Social Phobia subscale and the SCL-90-R may be due to the fact that the SCL-90-R is partially comprised of social anxiety items and that the sample was limited to social phobics. Thus, the lack of association between the SPAI Social Phobia subscale and the measures of specific forms of psychopathology such as depression and overall trait anxiety suggest that the subscale is relatively specific to symptoms of social phobia, at least in this population. It should be noted, however, that we did not examine the specificity of the SPAI to social phobia in persons with other primary forms of psychopathology, such as other anxiety disorders. Although Turner, Beidel, Dancu, and Stanley (1989) found the SPAI to distinguish social phobia from panic disorder and obsessive-compulsive disorder, persons with multiple diagnoses were excluded from their sample. Given the high degree of comorbidity among the various anxiety disorders as well as among anxiety and depression, it is important that the discriminatory power of the scale be evaluated in samples with more than one diagnosis. This issue is particularly important since a major criticism of prior instruments such as the SADS and the FNE has centered on their failure to distinguish social phobics from other groups (Turner et al., 1987).

Consistent with the results of Turner, Stanley, Beidel, and Bond (1989b), the present findings support the distinction between the Social Phobia and the Agoraphobia subscales of the SPAI. In contrast to the Social Phobia subscale, the Agoraphobia subscale was not significantly correlated with any of the measures of social anxiety, including subjective anxiety experienced during the role-play test. The Agoraphobia subscale was, however, strongly correlated with another measure of agoraphobia (FQ-AG). The distinctiveness of the two scales raises an important question about the scoring of the SPAI. In their initial report, Turner, Beidel, Dancu, and Stanley (1989) suggested that the Agoraphobia subscale be subtracted from the Social Phobia subscale to yield a Difference subscale score. The rationale for this procedure was that "the Agoraphobia subscale serves as a suppressor variable to control for complaints of social anxiety that are only part of the larger clinical picture of agoraphobia" (p. 37). This procedure appears to be based upon the criterion in

the DSM-III-R that social phobia should not be diagnosed if symptoms are clearly due to another Axis I or III disorder, including panic disorder. However, DSM-III-R permits the co-occurrence of social phobia and agoraphobia and does not dictate a hierarchical relationship between the two such that when symptoms of both are present the diagnosis of social phobia is *necessarily* subsumed under the diagnosis of agoraphobia. That is, it is possible to have the symptoms of both social phobia and agoraphobia simultaneously, and studies have suggested that this pattern of comorbidity is more common than was previously thought (Mannuzza, Fyer, Liebowitz, & Klein, 1990).

The pattern of results for the Difference subscale was very similar to the pattern for the Social Phobia subscale. The magnitude of the correlation coefficients for the social anxiety measures was (with one exception) slightly greater for the Social Phobia subscale than for the Difference subscale. This finding suggests that the unadjusted Social Phobia subscale may be the better measure of social phobic symptoms. However, the Social Phobia subscale was also more highly correlated with blood and injury fears and with global psychopathology relative to the Difference subscale. This finding suggests that the Difference subscale might be the more specific measure of social phobic symptomatology. Thus, the present data are equivocal with respect to which subscale is the better measure of social phobia. Nevertheless, it is likely that by subtracting symptoms of agoraphobia from those of social phobia in all cases, the SPAI Difference subscale may at times give a false impression of the true clinical picture when symptoms of both conditions are present. Specifically, the rate of false negative judgments about the presence of social phobia may be increased. By analogy, depression and anxiety frequently co-occur, and in some cases one may become depressed secondary to an anxiety disorder. Since this relationship cannot be assumed for all cases, however, measures of depression do not include an anxiety component that is subtracted. Instead, depression and anxiety are each measured independently, then judgments are made about their relationship on a case-by-case basis. Further study of this issue is warranted, as it may prove that some correction procedure involving agoraphobic symptoms will in fact increase the specificity of the SPAI to social phobia. In the meantime, it appears that the most prudent approach is to use the Social Phobia and Agoraphobia subscales separately, with judgments regarding the relationship between the two being made on the basis of other assessment data on a case by case basis.

The present study strongly supports the concurrent validity of the SPAI. Limitations of the study include the relatively small sample size, the lack of nonsocially phobic comparison groups, and the restriction of the sample to the generalized subtype of social phobia. Together with prior research on the scale, these results suggest that the SPAI is a useful and valid measure of clinical social phobia. Further research is needed to address the above limitations, to assess the test-retest reliability of the instrument in clinical samples, to examine its sensitivity to changes as the result of treatment, and to examine the utility of correction procedures involving agoraphobic symptoms in order to increase the specificity of the instrument.

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